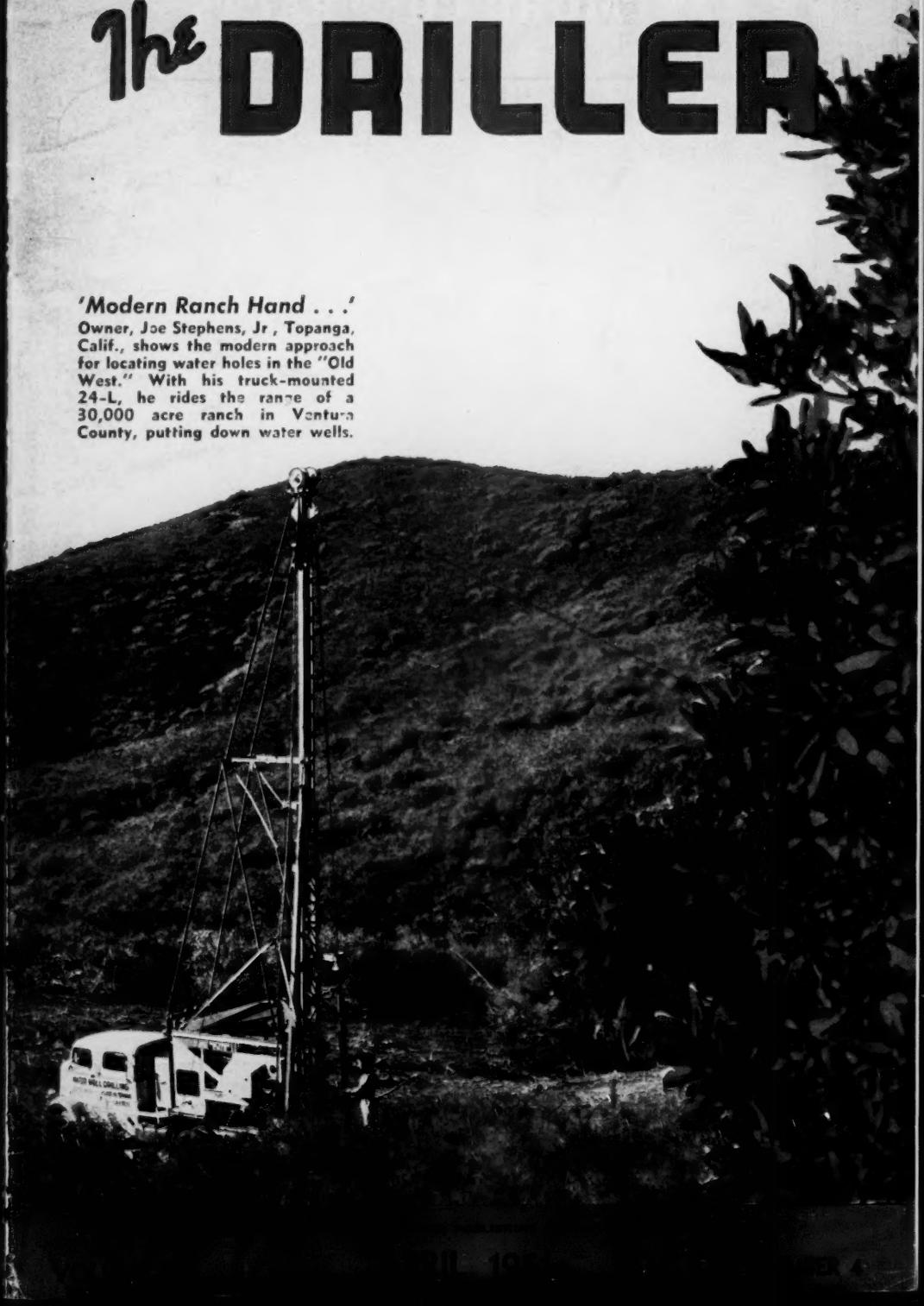
The DRILLER



'Modern Ranch Hand . . .'

Owner, Joe Stephens, Jr , Topanga, Calif., shows the modern approach for locating water holes in the "Old West." With his truck-mounted 24-L, he rides the range of a 30,000 acre ranch in Ventura County, putting down water wells.

Oil And Water *Do* Mix!

Down Abilene (Tex.) way, two prominent water well drillers are doing a fine bit of business these days using their rigs for oil field work. This is the story of Bill Varner and his brother-in-law, Bill Neill, and the many interesting experiences they have had while drilling wells for both water and oil.

MOVING a drilling rig to a working location inside a canyon may be an ordinary job in some parts of the country, particularly in the far West. But, when the canyon is so deep that the rig's 30-ft. derrick doesn't rise above the top of the canyon's walls, moving in and setting up can become a bothersome chore. You can take the word of driller Bill Varner, Abilene, Tex., for this.

Back in 1946, an oil company called on Varner to drill a well near Jayton, Tex., a small town located in very mountainous country about 85 miles northwest of Abilene. Water was hard to find, and Varner was forced to drill three holes before he brought in a suitable well. The last hole was drilled inside the canyon.

Looking over the proposed job site, Varner realized he couldn't pull his trailer-mounted Fort Worth

Model N spudder down into the steep canyon. So he hired a truck equipped with a power winch and had the driver winch his rig into position at the base of the canyon. Varner hit water there and completed an 8-in. well at a depth of 50 feet.

Calls on Tractor

Upon completion of the job, Bill was faced with the same moving problem, only in reverse—he had to get his rig out of the canyon. A Caterpillar tractor happened to be doing dirt work in the area, so Varner hired the machine to tow the rig out.

This is only one of the many unusual job experiences that the Abilene contractor has had in over 20 years of drilling. Bill, who was born and raised on a farm about nine miles north of Cross Plains, Tex., grew up in the drilling business. His father, Will Varner, was a water well contractor. As a lad, still too young to work regularly, Bill helped his dad around the rig by handling the chore of pouring water into the drill hole. This early apprenticeship laid the groundwork for Bill's continued interest in drilling, an interest which finally led to the formation of his own drilling concern in 1943.

Varner's early water well drilling activities were centered around his wife's home town of Seymour, Tex. There, using a trailer-mounted Fort Worth Model N spudder, he drilled numerous wells for farms and ranches in the area. After two years in this location, Bill moved his business and family to Abilene. In February, 1946, he purchased his second rig, a Bucyrus-Erie 22-W. About the same time, Varner decided to devote most of his time to drilling in the oil fields which are scattered around Abilene.

"I decided to make this change," he said, "because water well drilling was limited by a shortage of water outside the Abilene area. While many excavating contractors hit water when digging basements for buildings in Abilene proper, the drilling contractor had a hard time finding water outside of the city. So, to make progress in my profession, I decided to concentrate on oil well drilling."

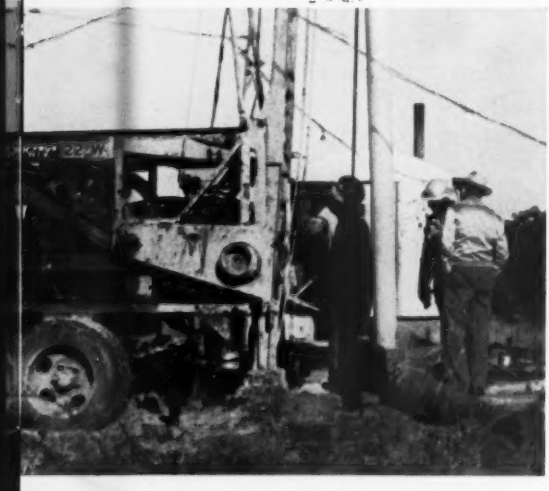
In 1947, Varner sold his Fort Worth rig and the 22-W. He bought two new rigs—a Bucyrus-Erie 22-W and a 24-L. He put the 22-W to work drilling shallow oil wells, while the 24-L worked on tailing-in jobs. (The latter type of work involves completing an oil well after it has been started by a rotary rig. The rotary drills down to the "pay" formation. The drilling mud, however, has a tendency to damage the porosity of the sand so the rotary stops drilling at "pay," sets pipe, and pulls off the job. Then, a cable tool rig takes over, drills out the plug, and

• Into input wells, like this one being worked by the 24-L, water is pumped at 100 pounds pressure. The water is pushed through the adjacent sands, forcing oil toward another well in the area.

drills on down through the "pay" formation.)

The 24-L was drilling in behind a rotary rig in August, 1949, when a costly accident happened. "This was a 2,412-ft. oil well," Varner said, "and there was lots of gas in the hole. An elderly fellow, standing around the job site, pulled out matches to light his pipe. Before anyone could stop him, he struck one, setting the well on fire." In the resulting blaze, the drilling rig was damaged considerably. But Bill rebuilt the machine and sold it in January, 1950. He sold his three-year-old 22-W two months later.

Today, Varner owns and operates four drilling rigs—a Bucyrus-Erie 22-W, purchased in June, 1949, and three Fort Worth spudders (Models N, H, and Super D). The 22-W is mounted on a 1½-ton long wheelbase Ford truck, while the Fort Worths are all trailer-mounted. With this lineup of equipment, Varner and his 15 employees serve a territory centering in Abilene and branching out within a 100-mile radius of the city.



• On the day this picture was snapped, the 22-W started out at a depth of 396 feet at 8:00 A.M. and was down to 480 feet at 3:45 P.M. the same day.

Praises Water Drilling

Despite his shift to oil well drilling, Bill thinks water well drilling is one of the best businesses for an individual to enter. "If a fellow's going to work for himself," he said, "there's no better business for it."

Bill thought so much of the drilling game that he was instrumental in influencing his sister's husband, Bill Neill, to enter it. Neither Varner nor Neill have ever regretted this venture. Neill first purchased a Fort Worth rig and in six months time was out of debt with money in the bank. He later sold the Fort Worth rig and purchased a Bucyrus-Erie 24-L. He runs that machine now in addition to a 22-W rig.

When *The Driller's* representative visited Neill recently, he found Neill specializing in the drilling of input water wells for the oil industry. Both his rigs were working on a secondary recovery project on the Woodley Petroleum Co.'s John A. Flores lease, located 10 miles south of Baird, Tex.

The drilling pattern on this lease is such that one input well is put down for every four oil wells. "So far," Neill said, "we've drilled 10 wells, five of them for water-flooding purposes, five for pumping oil out of the ground. The average well depth is 785 feet."

This field was worked originally in 1927. Secondary recovery operations were started in 1931, using gas injection wells. These are being replaced now with input water wells because water-flooding is a cheaper and more effective method of secondary recovery.

In drilling the input wells, Neill sets cement lined 4-in. casing in the

hole. The cement lining prevents salt water, which is used in the water-flooding operation, from rusting out the casing. The water is pumped into the well under 100 pounds of pressure which pushes the water through the adjacent sands, forcing oil toward another well in the area. When the well begins to take oil, the pressure is broken down to between 90 and 110 pounds.

While the 24-L is handling the drilling of input wells, the 22-W puts down shallow oil wells in another section of the lease. Neill's drilling crews set 8-in. casing down to the top of the "pay" formation (Moutray sand), and then 6-in. down through it.

This particular field had produced 1,900,000 barrels of oil up to July 25, 1950, when the water-flooding project was begun. The oil company expects to recover another million barrels through the water-flooding method of secondary recovery.

Back in 1947, Neill used his 22-W on another water-flood project. Drilling was carried out on the Cogburn and Welch lease of the Woodson field, located in Throckmorton county about 65 miles northeast of Abilene. Over 100 wells were drilled in the entire project, Neill drilling 13 of them. The wells, averaging 360 to 375 feet in depth, were about evenly divided between input water wells and shallow oil wells.

Neill's drilling crews set 1½-in. lined pipe in the input wells, while 2-in. tubing with a packer on it was set in shallow oil wells. The 22-W worked on this project for three months.

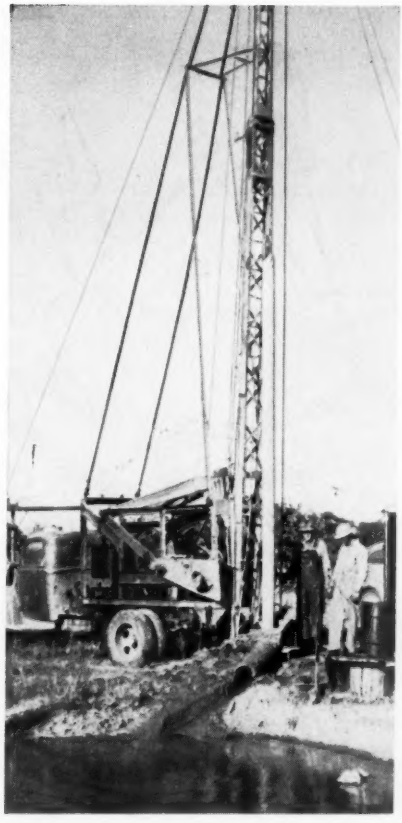
Family Enters Picture

Besides the two Bills, Varner and Neill, other members of Varner's immediate family are engaged in drilling around Abilene. Varner's two brothers, J. N. and A. L., own a Bucyrus-Erie 22-W. They have taken over their father's water well drilling business.

A brother of Varner's wife, Don E. Box, owns a Bucyrus-Erie 22-W and is also engaged in water well drilling. Box attends school, however, and drills only on a part-time basis.

Even though the various drillers are competitors, in a sense, there is

(Continued on page 16)



• Here the 22-W, manned by Neill's crew, is down 480 feet on a shallow oil well. Completion depth was expected to be 790 feet.

It Takes More

Drilling, like any other business, has its pitfalls. And, unless the contractor is aware of them, there's a slim chance his business can survive successfully—no matter how well he can handle a rig. This article points out these pitfalls

by Robert F. Welch

THERE are probably few drilling contractors in the country today who don't pride themselves in being able to handle a rig as well or better than any man in their crew. Altogether too frequently, however, the man who knows how to sink a water well with maximum efficiency figures going into business for himself is simply a matter of buying equipment and starting out after the jobs.

This familiarity with how work is performed may be a very dangerous pitfall if he makes the big mistake of assuming that skill as a mechanic gives him all the qualifications of a business man.

Perhaps he may reason there are certain other considerations — like driving around to inspect jobs where your men are working, allowing salesmen to take you to lunch, and maybe doing a little pencil work occasionally. And, with this in mind, he makes a down payment on a drilling rig and starts shopping around for a larger automobile to go with his new station in life, hoping that before long he'll be able to purchase more machinery and perhaps build an office to serve as headquarters.

Why is it so few of these dreams come true? Here's the answer in a

Than Drilling Skill . . .

nutshell: *Conducting a successful contracting business requires even more specialized skill than handling a string of tools.*

True enough, a thorough knowledge of drilling is one of the first requirements for success. But over and beyond this knowledge is a completely new set of skills which even the best worker may never be able to master. And he certainly won't stand a fighting chance if he blindly refuses to recognize the need for developing greater capabilities.

Overhead is Significant

Probably the best example of the difficulties involved is in the seemingly insignificant item of overhead expense. The new contractor doesn't have to be very smart to recognize that he now has additional business expenses to consider, but almost always he fails to realize just how many of these there are. For instance, the cost of a contractor's license is obviously part of overhead. So is the time it takes to make the application. Time which you lose when you might be drawing wages working for another man is actually part of your cost of doing business. The lost wages never go down on your books or appear on your income tax statement, but they're still important.

Theoretically, profits from operation are supposed to compensate for the hours spent figuring estimates, delivering bids, making collections and doing the thousand and one things which suddenly become your responsibility. The man on your payroll doesn't have to worry about such problems. He can go to sleep at night without that nagging fear that the bottom may drop out from everything tomorrow. You're stuck if you can't get enough work to keep your equipment busy—he just goes to work for somebody else.

The unproductive time which you put in on your new duties can't simply be disregarded. At rock bottom prices, an hour spent at paper work or talking to city officials about their plans for a new well is just as valuable as an hour of drilling time. Too often the new contractor jumps to the conclusion that these details are part of the price of doing business. In a very real sense they are, but unless they're compensated for by additional profits, you're in for a lot of trouble.

Business men work for profit and if they don't get paid for their efforts they don't stay in business. You can fool yourself on this point for a while, but eventually it will catch up with you. Some drillers operate their rigs on the theory that if they can collect just a few bucks over regular wages they're better off than they were before. Actually, they would be money ahead to hold down two different jobs, collecting paychecks for both daytime and evening work. It wouldn't require any more time, nor would it require tying up capital in machinery which isn't earning its keep.

In the final analysis, the whole matter of inadequate knowledge about how to run a business can hurt the whole water well drilling industry. For example, whenever a driller submits a bid which includes only the totals for material and labor, with perhaps a "blue sky" overhead figure, he's not only headed for disaster himself but also is drag-

(Continued on page 16)

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Indiana Passes Bill Restricting Ground-Water Use

ON February 21, Indiana's Gov. Schricker signed into Indiana law a bill granting this state's conservation department the authority to restrict use of ground-water in areas where there is a shortage, according to a correspondent's report.

The measure requires that any person, firm or corporation using more than 100,000 gallons of water a day in a restricted area must first obtain a permit from the State Conservation Department.

Sponsored by Senators Baldoni and Somers, the bill was listed in the Legislature as Senate Bill No. 56.

CONVENTION SCHEDULE

Missouri—April 16-17; Hotel Bothwell, Sedalia.

Wisconsin — April 19-20; Hotel Northland, Green Bay.

Indiana—April 24-26; Athenaeum, Indianapolis.

Idaho—June 11-12; Burley.

Michigan—June 22-23; 119th U. S. Armory Building; Lansing.

Washington—November 9-10; Tacoma.

Water Picture Appears Spotty

A DROUGHT in southern Texas was the outstanding feature in a belt of below normal runoff and ground water levels that extended north to the Great Lakes, according to the latest *Water Resources Review* reported by the Geological Survey.

Along the Atlantic slope from Virginia to Alabama, runoff was deficient. Ground-water levels were generally low also.

Generally excessive runoffs occurred throughout much of the Ohio River Basin; large floods occurred in the smaller streams of western Kentucky. Ground-water levels reached a new January high in the key observation well at Kenova, W. Va., and came within 0.05 ft. of the January high in the well at Clarion, Pa.

In the Northwest, runoff continued to be excessive but the area covered is not quite so large as a month ago. Flow of Columbia River at The Dalles again increased contraseasonally to reach 195 percent of normal flow. The drought in the Southwest continues, and the area of deficient runoff has spread in upper Colorado River Basin; new record lows for January were established at several key gaging stations and observation wells.

Sell Dependability!

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It's the one great quality your customers need in a water system. And with the F&W line you supply them with unmatched dependability whether they have a deep or shallow well and whether they prefer a centrifugal-jet or piston type pump.

And all these F&W water systems are great performers. Typical is the new F&W two-stage deep well pump shown on the left. It delivers high capacities at depths formerly reached only by more expensive three-stage pumps. Go on down the whole F&W line and you'll find the same high performance and that great quality of dependability that your customers need and want. Drop us a line and we'll be glad to send you full information on the line that sells *and stays sold.*

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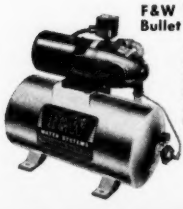

F&W Varijet Bullet Pump
Exclusive patented design pumps 40 to 70% more water per H. P. Uses less electricity.

Deep Well 6" Stroke Piston Pump
Built like a fine motor car. Pressure-lubricated bearings. Heat-treated gears and shafts.

F&W Multi-Purpose Pump
Change from shallow to deep well simply by moving jet from the pump down into the well. No extra package or parts to buy.

DEPENDABLE FOR 85 YEARS

F&W WATER SYSTEMS

NEWS OF THE MONTH

Minnesota Holds 29th Convention

DESPITE temperatures which hovered around the zero mark, approximately 100 water well drillers attended the 29th annual convention of the Minnesota Water Well Contractors Association, which was held at the Nicollet Hotel, Minneapolis, on March 8-10.

John S. Hoge, association president, called the convention to order, at which time Eric G. Hoyer, mayor of Minneapolis, welcomed the drillers. Lloyd Oliver, president of the National Water Well Association addressed the group after being introduced by Robert R. Storm, executive-secretary of the NWWA. Also on the program was O. M. Kent of the National Production Authority, who spoke on the present pipe allocation problem.

The convention was highlighted by a re-election of officers. Those re-elected were: John Hoge, St. Paul, president; M. P. Christianson, Penguilly, vice-president; and Al Zuercher, St. Paul, secretary-treasurer. Named to the Board of Directors were: Mike Ice, Wayzata; Algot Johnson, Parkville; A. E. Mueller, Gaylord; Tom Renner, Minneapolis; Harold Bemis, Waterville; and Tony Martell, Somerset, Wis.

Well-attended technical sessions also marked the program with panel discussions on accounting problems and contract and cost forms. A speech entitled "Things We Should Know About Insurance" was presented by Elmer E. Turnblom of the Hardware Mutuals.

Another Hardware Mutuals' representative, L. Arthur Barsness, gave a talk on a "Group Insurance Program." Other speakers included Arthur Upgren, associate editor of the Minneapolis Star and Tribune, Robert Sneider, U. S. Geological Survey, and E. W. Bennison, E. E. Johnson, Inc.

A movie on the Glacier Park and Canadian Rockies was shown by Western Air Lines.

All drillers were guests at luncheons presented by the R. R. Howell Co., Minneapolis, and E. E. Johnson, Inc., St. Paul, on March 8 and 9.

Michigan Sets Convention Dates

ON June 22-23, Lansing, Mich., will be the site of the 23rd annual convention of the Michigan Well Drillers Association, according to Harold Armstrong, secretary. Headquarters for the convention will be the 119th U. S. Armory Building.

"Plans are already under way for a bigger and better convention in 1951," Armstrong says.

Washington Plans For '51 Convention

PRESIDENT O. F. ZINKGRAF of the Washington State Well Drillers Association, Inc., has recently named a seven man committee to take charge of this years annual meeting, according to a monthly bulletin. The meeting will be held in Tacoma on November 9-10.

Those named were: W. L. Swinney, Charles Weller, L. B. Richardson and L. R. Gaudio, Tacoma; G. M. Patterson, Olympia; W. H. Everitt and R. J. Cosman, Seattle.

Empire Drillers Elect '51 Officers At Annual Meet

THE Utica Hotel in Utica, N. Y., was the location for the annual meeting of the Empire State Water Well Drillers' Association held January 10, 1951.

The meeting was featured by election of officers for this year, a discussion on forming locals, and an affirmative vote to join the National Water Well Association for 1951 as a corporate member.

Officers elected were: Ray Knapp, Clarence, president; James Stoutenburg, Glenford, vice-president; and Robert E. Klindt, Morris, secretary-treasurer. Elected director for three years was Louis Malanchuck, Croton Falls.

Former association president, Fred Merrill, Liverpool, expressed his pleasure and the benefits he had derived from his work with the association. Speaker of the day was Robert D. Starr, Bucyrus-Erie Co. drill sales representative, Englewood, N. J. His topic was "Do's and Don't's of Well Drilling Business," in which he pointed out the importance of contracts and good bookkeeping methods as well as good workmanship.

Another topic of interest was "Civilian Defense" which disclosed that in the case of an atomic attack which contaminated water supplies, the association would turn out as a body to remedy such an emergency by trying to supply pure water.

National Campaign

FINAL details of the 1951 National Water Systems Month campaign were approved at a joint meeting of the executive board and the publicity and markets committee

WATER SYSTEMS

Performance at low cost . . . there's a selling point that boosts your sales and profits! Quote the price of Duro's 49 Vertical Water System, and watch your customers' eyes light up. You do your customers a favor when you sell the Duro 49 Water System, for they can depend on quality, dependability, and ruggedness at a price they're glad to pay. Sell DURO and know why every DURO owner becomes a DURO salesman for you!

Duro builds a complete line of water softeners and water systems.

FOR MORE INFORMATION ON DURO PROFIT MAKERS, SEND TODAY FOR THE NEW DURO CATALOG!

THE DURO CO.
DAYTON 1, OHIO
Pioneer Manufacturers of Electric Water Systems, Softeners & Filters since 1913

of the National Association of Domestic and Farm Pump Manufacturers in Chicago, January 26.

The campaign, according to Herbert C. Angster, executive secretary and director of the association, will emphasize the dealer's role in stepped-up farm production during the national emergency. The service theme of the campaign is expressed in the campaign slogan: "Produce More Food—Produce Better Food; Save Labor — Guard Health." A month-by-month schedule has been adopted to coordinate manufacturer and dealer promotion leading up to National Water Systems Month which is May, 1951.

New Submersible Pump Offered

FAIRBANKS, Morse & Co., Chicago, manufacturer of all types of pumping equipment, has recently announced a new submersible pump. According to the manufacturer, the pump is designed to deliver capacities at settings in excess of 70 feet with well diameters of four inches and larger.

The motor and pump are assembled in a tubular frame and the entire unit is installed in the well below pumping level. The motor relay and capacitor are located in a control box above ground where they are easily accessible, and may be removed without disturbing the main well installation.

The company says no jets, rods or shafts are required and adds that the pump is water-cooled, water-lubricated and self-priming.

A bulletin describing this pump in detail is available by writing Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill. Ask for publication ADB590.1.

Deming Issues Booklet on Line

THE Deming Company, Salem, Ohio, has recently issued a booklet entitled, "Deming Water Systems for Shallow and Deep Wells."

This booklet points out to the prospective user of a water system, the many places where a water system can be employed, both on the farm and in the home. In addition, it illustrates the complete line of this company's shallow and deep well water systems, pointing out many different construction features.

A copy of this booklet can be obtained by writing to the company.

Baker Erects Office-Warehouse

A COMPLETE single story branch office and warehouse is being erected in Fort Dodge, Iowa, by the Baker Manufacturing Co., Evansville, Wis.

The building is of brick construction and has 12,210 sq. ft. of floor space. Adequate parking and loading dock facilities have been incorporated into the new branch headquarters.

The area served by this branch includes northwest Iowa.

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For You...

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- Personal sales and engineering help from factory-trained representatives working out of local Ingersoll-Rand branches.
- Adequate warehouse stocks in 26 cities and prompt shipments assured.
- Extra plumbing equipment sales.
- Extra appliance sales.

For Your Customers...

- Easy selection from three models covering all water supply needs for deep and shallow wells.
- Jets built for greater capacity with maximum pressure and lifts up to 120 ft.
- Motor-shaft-mounted impeller eliminates shaft whip, and rubber grommets for mounting bolts provide quieter operation.
- More gallons per hour per kilowatt of electricity.
- Compact, self-contained motor-and-pump unit means easy, low-cost installation.
- Self-adjusting and tamper-proof mechanical seal minimizes leakage and eliminates need for frequent repacking.

Investigate, now, the money-making possibilities in becoming an Authorized SUPIRJET Dealer.

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Before you buy, get all the facts on why SMITHway pumps lead in dependability and low-cost service.

Exclusive! SMITHway pumps have fabricated all-steel heads for maximum strength, maximum service.

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Oil And Water . . .

(Continued from page 7)

no throat cutting going on. If something comes up that one of the drillers can't handle at the time, he turns the job over to one of the others. The favor is repaid later.

Getting back to Bill Varner, some mention should be made of the new office building he put up recently in Abilene. The 16 x 24-ft. building, which fronts on a new four lane highway running into the city, will serve as a business office. Varner also bought an old general store in Cross Plains. This building will be used as a secondary office, machine and repair shop.

Drilling Skill . . .

(Continued from page 9)

ging everyone else down with him. Prices for drillers' services in the area will inevitably drop and before he's haled into a bankruptcy court his competitors will be seriously harmed.

Exactly how much do you know about these subjects: depreciation, taxes, bad debts, insurance, claims and adjustments, goodwill?

The national mobilization program will greatly increase the problems of obtaining materials and adequate manpower. Every business man in the country will be faced with higher costs and rougher going in every phase of activities. Now is the time to prepare yourself.

Calgon Office

A NEW Chicago district office has been established by Calgon, Inc., Pittsburgh, Pa., manufacturer of a scale remover for water systems. The office is at 1463 Monadnock Building, 53 W. Jackson Blvd., Chicago 4.

"The Greatest Name in Cable Tools..."

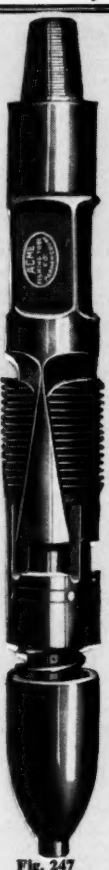
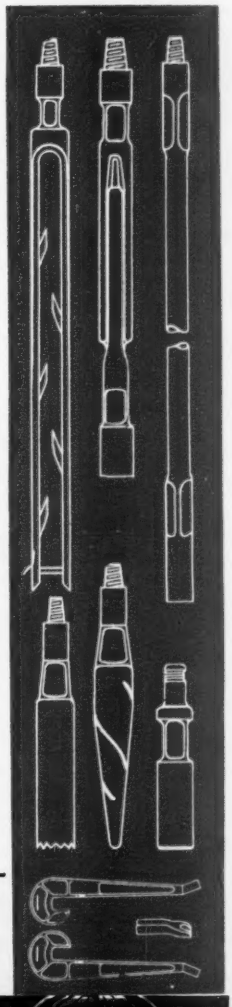


Fig. 247
Acme Trip
Casing Spear

Acme

TRUSTWORTHY SINCE 1900



Recovers Costly Pipe

. . . U-N-D-A-M-A-G-E-D !

In these hi-cost pipe times, Acme's Trip Casing Spear is a bonus value tool . . . Does its important recovery job easier, quicker and without pipe damage. Vital parts of special alloy steel. Full circle hitch prevents oblonging when jarring. Long slip seats and finger-trip ring assure non-breakable slips. Quick-setting, positive action tripping device, for various pipe weights. (3-Slip style, 6" and smaller; 4-slip, 8" and larger.)

From billet to finished Spear, every detail confirms Acme's fine tradition for: PREMIUM grade steel, to most rigid analysis specifications; CORRECT heat-treatment, to exactness of electrical automatic controls; Craftsmanship of 51-years specialized experience backlog.

Acme Casing Spears are STANDARD with 100's of top-flight Drillers everywhere. Because accumulated "know-how" of our own fishermen puts in that EXTRA inner-ruggedness so essential to longer, harder field service.

The tool featured above – one of 95 in our new Catalog — is fashioned by 51-years of superior "know-how" . . . providing more of EVERTHING needed in an Acme String.

Mail penny postal NOW for your free copy of Acme's new 32-page Catalog and Tool-use Manual — expressly compiled and packedful of "cashable" information for Water Well Drillers.

Acme Fishing Tool Co.

PARKERSBURG, W. VA.

ACME DRILLING & FISHING TOOLS Since 1900

To-be-Sure—Always Ask for Acme's.

The Driller & The Law

Driller Sues For Labor and Material

EVERY drilling contractor will be interested in a decision rendered January 3, 1950, by the California District Court of Appeal, Third District, in the case of Richter v. Walker, 213 Pac. 2d 53.

The decision shows that if a driller does not guarantee to produce a certain flowage volume or certain quality of water and uses reasonable care and skill in his work, he is entitled to the price agreed upon. And even if he has fallen down in some minor respect—such as failure to bail the well out immediately—he is entitled to the agreed price less the cost of remedying the situation.

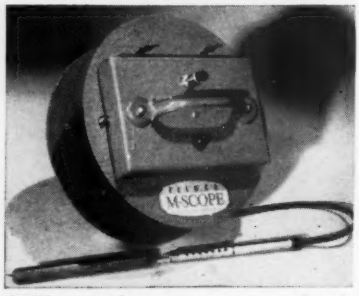
And, "between the lines" of the decision of the court a reader will sense the importance of having drilling contracts *reduced to writing and signed,* to guard against such rash claims as were made in this case by the landowner—that there was an oral guaranty by the driller that he would drill a well producing 600 Gpm. (The owner's attorneys later abandoned the contention that there was such a guaranty.)

One also gathers from the opinion that it may be wise to separate contracts for drilling from contracts to furnish pumps, etc., although the court does not say so in so many words. In this case, there was a separate contract to sell a pump and motor at a fixed price. That cinched the driller's right to collect that amount, less such damages as might be offset against it for the driller's failure to do his job properly. Where there is a single contract for drilling and well equipment, many courts might say that unless there is a *substantial* completion of the drilling part of the contract nothing can be collected.

Contractor Richter sued defendants to foreclose a lien on their land for labor and materials furnished in drilling and equipping a well. Defendants counterclaimed for damages on the ground that the contractor failed to drill the well in a workmanlike manner, thereby preventing production of an adequate well.

Deciding the claim in plaintiff's favor and the counterclaim in defendant's favor, the trial judge at Red Bluff, Calif., said the evidence showed that the contractor knew defendants *needed* a well producing

WATER LEVEL INDICATOR



Will provide accurate water level data for drawdown studies under pumping and static conditions. Self-contained battery supply. Immediate shipment.

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250 feet of cable $37.50
500 feet of cable $47.50
1000 — 1500 Feet Cable
Quoted Upon Request

FISHER RESEARCH LAB., Inc.
PALO ALTO CALIF.

GOULDS JET-O-MATIC

Your customer, after all, wants to buy dependable running water *service*. That's why, when he asks your advice in selecting a water system, your choice is important — to him and to you.

When you specify Goulds Jet-O-Matic, your customer is assured of top performance. *You* earn his lasting respect for a complete job well done . . . the sort of confidence that rolls up business over the years.

The Jet-O-Matic is a dual service pump, using the same basic unit for shallow *or* deep well installations. Units range from ¼ H.P. to 5 H.P., capacities to 4120 G.P.H.; well depths to 260 ft. Built and backed by today's largest manufacturer of pumps exclusively — Goulds. It's the *right* pump — for all your jobs.

Write for details on Goulds complete line . . . including working heads for depths to 500 ft.

GOULDS PUMPS INC. • Seneca Falls, N.Y.

GOULDS WATER SYSTEMS
Since 1848
FOR EVERY FARM AND HOME NEED

SAFER, FASTER JACKING
• ON RIG SKIDDING
• MACHINE MOVING
• IN CONSTRUCTION
with SIMPLEX Geared Jacks

Designed for heavy duty action, engineered to save time and money on scores of jobs.

TEMPLETON, KENLY & CO.
1064 S. Central Ave., Chicago 44, Ill.

from 450-500 Gpm; that, if the well had been properly drilled, it *might* have produced that much water, but it failed to produce more than 150 Gpm; that such failure was *partly* due to bad drilling, leaving the well of only *slight* value to defendants; and that defendants spent $635 in trying to improve the well after the contractor refused to remedy the situation. Judgment was allowed the contractor for the price of the pump and motor, less the $635 so spent by defendants.

On driller Richter's appeal, the District Court of Appeal set aside the trial judge's decision, leaving the case open for a new hearing and an allowance to Richter of at least the value of the work he did on the well.

After reviewing all of the evidence in the case, including the testimony of another driller who tried to produce more water in the well, who merely made additional perforations in the casing and bailed the well out without increasing flowage of the well, and who found no fault with the way the well had been drilled, the higher court concluded that if driller Richter was at fault at all it was in not immediately bailing out the well when drilling ended. The court said: "Therefore, unless it can be said that plaintiff guaranteed to drill a well that would produce the desired amount of water, he should have been allowed the amount agreed to be paid him, less, perhaps, the reasonable cost of bailing it.

"However, there is no finding that plaintiff made such a guaranty, nor was it found that the well has no value because of other defects. There is no finding that if drilled in any other manner it would have produced 450-500 Gpm . . ."

Other Courts Cited

The court cited decisions of the appellate courts of Wisconsin, Nebraska, and Minnesota, to the effect that by merely contracting to drill a well a driller does not guarantee production of water, much less water of certain quality or quantity.

As to the money spent by defendants after plaintiff finished his work, the California court said that defendants were not entitled to increase the amount of such damages as plaintiff may have caused. Defendants were bound to take such steps as were reasonably open to them to reduce the loss or damage resulting from plaintiff's fault. In short, if the well's flow had been obstructed by the driller's failure to perforate the casing or to bail the well out, damages should not be based upon the obstructed flowage but should be limited to the reason-

Read What OWNERS SAY *about the* *Bucyrus-Erie* 20-W

"How do you like your new 20-W?" —that's the question we asked a number of owners of this great new successor to the 21-W. Here are a few typical comments.

'In Class by Itself'

For its intended use, the 20-W surpasses any machine ever operated by us or seen operated by us. It is definitely in a class all by itself.

Jos. Laberge, Quebec, Canada.

'I'll Take the 20-W'

I have run three kinds of rigs and I'll take the 20-W. All the well drillers from a good way off have already come to see my machine.

Milton J. Ebert, Illinois.

'None Drill as Fast'

I have seen a lot of machines running but there are none that run and drill as fast as the 20-W.

Amos Retzlaff, Wisconsin

'More Strokes Per Minute'

Our 20-W does more strokes per minute than any other rigs we've used. We are well pleased with this portable and compact unit.

Harry C. Macomber, Belyea and Macomber, Inc., New York.

Find Out for Yourself

Write for complete information on the 20-W and on the larger 22-W and 24-L machines.

'No Other Machine Can Compete'

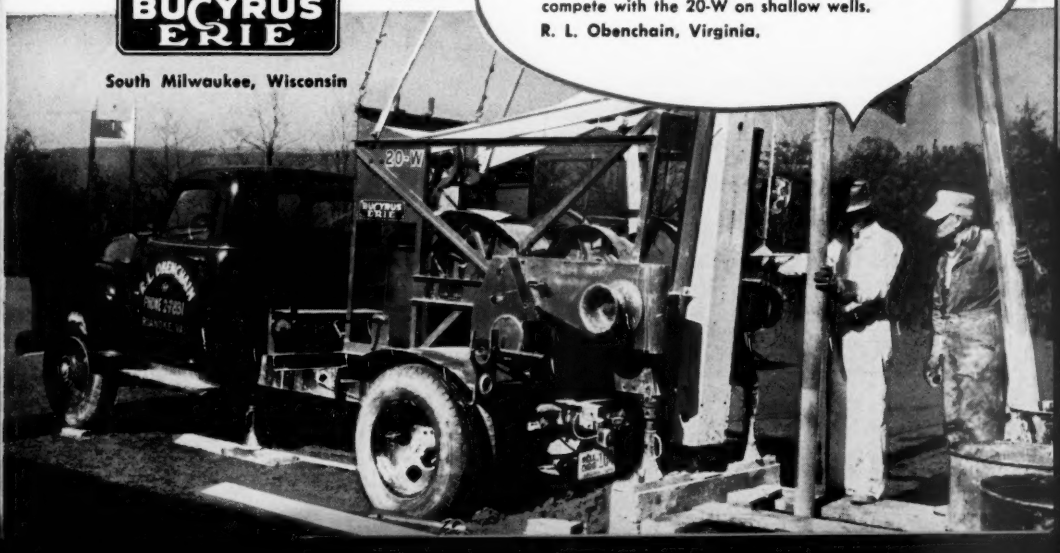
I've been drilling a long time — this is my 26th year. I have not seen the machine yet that can compete with the 20-W on shallow wells.

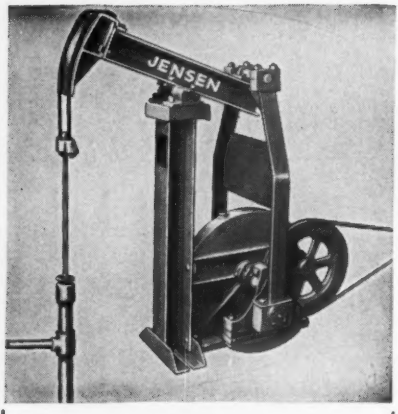
R. L. Obenchain, Virginia.

BUCYRUS ERIE

sswsoc

South Milwaukee, Wisconsin





Pump Handle Pete Says:

Jensen makes enthusiastic friends

By this I don't mean that you can expect to see a noisy bunch of folks jumpin' off the production line at JENSEN'S. What I do mean is that you can expect those folks you install Jensen Pump Jacks for to go around tellin' their friends and neighbors what a swell job they're doin'.

On most any installation a hundred feet or deeper you just can't beat a Jensen for economy, simplicity and dependability. And it always brings a lot of rejoicing when they find out for sure that a Jensen just costs about 7 cents a day to operate.

How 'bout sittin' down right now and writing to Jensen, at 1016 Fourteenth Street, Coffeyville, Kansas and ask for their free literature. Then get ready to do a lot of good deeds and make a lot of enthusiastic friends at the same time.

JENSEN
BROTHERS MFG. CO.
COFFEYVILLE, KANSAS, U. S. A.

able cost of perforating the casing or bailing the well.

As to plaintiff's lien rights, the California court decided:

Under the lien law of that state, plaintiff's lien rights came ahead of liens of third parties recorded after plaintiff *commenced* drilling. The trial judge erred in deciding that plaintiff's lien came ahead of only such other liens as were recorded after he *finished* his job.

Because defendants resisted plaintiff's lien on the ground that plaintiff's work was *valueless* to them, and the evidence did not indicate that this was so, there was a lien right at least to the value of the work done by plaintiff.

In enforcing the lien, plaintiff was entitled to be reimbursed for the cost of notarizing and recording his lien, but not costs of preparing the claim.

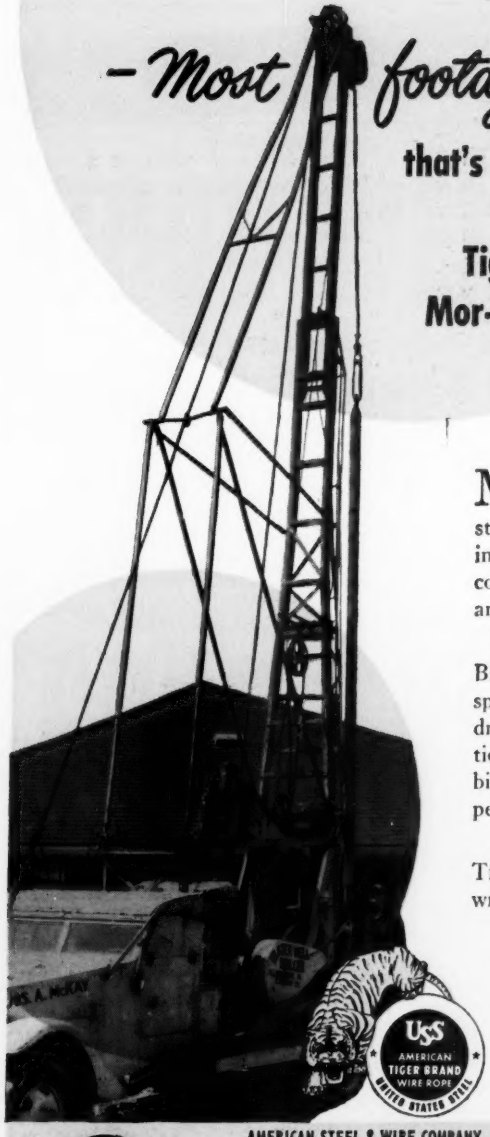
Arthur L. H. Street

Well Pumps 60 Gpm

• This well, 96 feet deep and 4-inches in diameter, pumped 60 Gpm. It was drilled with a Bucyrus-Erie 22-W, owned by John P. Cichy & Sons of New York Mills, Minn.

—Most footage per dollar

that's what you get with Tiger Brand Mor-Spring Lines



MOST well drilling contractors are looking for a wire line that stands plenty of wear without breaking up . . . line that has just the right combination of flexibility and resistance to abrasion and fatigue.

Such a line is American TIGER BRAND Mor-Spring—a line designed specifically for shallow cable tool drilling. You'll like its snap and action in the hole—and you'll notice a big difference in the footage you get per dollar of wire line cost.

Ask your supplier for American TIGER BRAND Mor-Spring Lines or write us for complete information.

24,000 feet of water wells were drilled with one 5/8" Tiger Brand Mor-Spring line. Contractor, Jos. McKay, Allison Park, Pa.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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AMERICAN TIGER BRAND WIRE LINES

UNITED STATES STEEL

WIT BITS

Two cab drivers met. "Hey pal," asked one, "whatsa big idea? How come you cab's painted red on one side and blue on the other?"

"Bub," was the answer, "it's a riot. When I gets in an accident, you should hear how all the witnesses contradict each other."

"I bought a cow that was supposed to have held the county record for blessed events. I have had her now for over a year and nothing has happened."

"Somebody must have given you a bum steer."

An elderly plutocrat went to a rejuvenating expert and asked: "Can you make me 25 again?"

"Yes," was the reply, "but it will cost you $500."

"Can you make me 18?" asked the plutocrat.

"Yes, but that will cost you $2,-500."

"I'll have the operation for 18," was the reply.

Six months later the expert called for his money.

"Nothing doing," said the patient. "I'm under age and if you say I'm not, I'll sue you for fraud."

"Daddy," he asked, "is my kitten a man kitten or a lady kitten?" Everyone on the bus listened.

"A man kitten," said the father.

"How do you know?" the child persisted. You could have heard a pin drop as the father replied, "Well he has whiskers hasn't he?"

"What is home without a mother?" the young driller asked with a sigh.

"I am, tonight," replied the little blue-eyed blond.

"Arthur!"

"What ma?"

"Are you spitting in the fish bowl?"

"No, but I been comin' pretty close."

The teacher wrote on the blackboard: "I ain't had no fun all summer."

Then she asked a small boy in the front row: "William, what should I do to correct that?"

"Maybe get a boy friend?" he suggested helpfully.

The Scotchman who emigrated to New York was sitting on a pier in Jersey City when a diver came to the surface and removed his headgear.

"Hoot mon," said the Scot, "why did nae one tell me aboot this? I'd have waded over maself."

A driller was consulting a psychiatrist. Among other questions, the doctor asked: "Are you troubled by improper thoughts?"

"Why no," answered the patient. "To tell the truth, doctor, I rather enjoy them."

There's something feminine about a tree. It does a strip tease in fall, goes with bare limbs all winter, gets a new outfit every spring, and lives off the saps all summer.

how to build your drilling business!

First bring in a

GOOD WELL

then install a

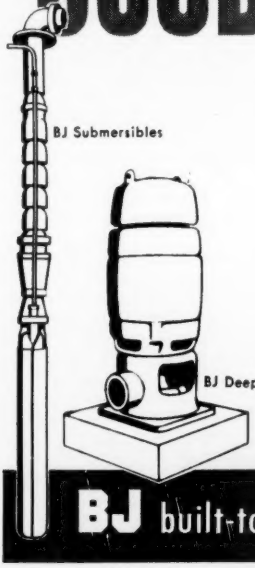
GOOD PUMP

BYRON JACKSON PUMPS

(You can't do better than a BJ! Byron Jackson gives you a full line of dependable pumps in sizes and types to meet every need.)

now you're sure to get lasting

GOOD WILL



Word-of-mouth advertising is like money in the bank in your business. To get the kind of recommendations that send new business your way, you've got to keep your wells *delivering*. To keep wells delivering dependably, put a BJ Pump on the job. BJ backs you with the best pumps built and with pumps engineered to the need. More than that, as a manufacturer with an 80-year record for square dealing, you *know* you will always get proper parts and service attention. Find out about a BJ Dealership today!

Byron Jackson Co.

Since 1872

Dept. 80, Box 2017, Terminal Annex, Los Angeles 54, Calif.

BJ built-to-last pumps build business for you!

FROM THE MAILBAG

This page is open to any of our readers having questions to ask relating to drilling, driving pipe, dressing bits, etc. All letters will be answered promptly by experienced drillers and engineers who are qualified to give intelligent advice on these subjects. We will publish as many letters of general interest as space will permit. Address: The Driller, South Milwaukee, Wis.

Wants Information On Eliminating Gas From Water Well

Dear Sir:

Could you tell me how to eliminate natural gas from a water well? The well is 269 feet deep, and has a sucker rod pump in it. The gas doesn't come in until we start to pump the well. Also, would there be any way to separate the gas from the water so the well could produce both?

F. W. Ark.

You do not tell us in your letter how much casing is in the hole and at approximately what depth the natural gas is located. If the rock is free from joints and crevices and the well is cased and properly sealed below the gas level, the gas would have difficulty in entering the well casing. In other words, if the well is cased to a good water bearing formation below the entrance of the gas, there should be little danger or trouble with gas getting into the water.

If the well is not cased below the gas level and properly sealed, you should extend the casing to sufficient depth so there will be no chance of gas getting into the water. If the well is in limestone, the gas might descend through cracks and fissures of various sorts to a considerable depth and thus enter the groundwater.

As we see it, you cannot have both a gas well and a water well. If the well produces enough natural gas to make it commercially profitable for home use, then you can shut off the water and use the gas or vice versa. It might be advisable to cement the casing in place to protect the groundwater bodies against gas pollution.

If the gas is found at the 269-ft. level and you want water instead of gas, the only alternative will be to drill the well deeper and then case and properly seal the well to prevent the gas from entering.

Water Is Roily In First Pumping, Then Clears Up

Dear Sir:

I would appreciate receiving your opinion as to the reason or reasons for the following:

I drilled a 6-in. water well, 85 feet deep, and installed 28 feet of casing in it. After drilling through 10 feet of loose earth, I hit a soft red sandstone that became gradually harder until, at a depth of 40 feet, it was very hard and solid, a condition which continued on down to the final depth of 85 feet.

A ¾-hp jet pump was installed on the well with the jet set at 76 feet. The water level, before pumping, was approximately eight feet from the top of the well and dropped very little even though the well was pumped continually at approximately 350 Gph.

When I first started the pump, the water was very dirty and had fine particles of sand or rock in it. After pumping for about one-half hour, the water became crystal clear. But when the pump was stopped for a short time and re-started, the water became dirty again only to clear up in about 15 or 30 minutes. Incidentally, the fine particles in the water seemed to be very buoyant because it took them quite a while to settle in a container.

Could you give me some explanation for this trouble and any remedies for it? Also, I would like to know if there is any chemical, non-injurious to human beings,

Another Deming Turbine "Enlists"

The Deming Deep Well Turbine Pump illustrated is *"all set for service"* in a defense plant where round-the-clock production schedules demand dependable water supply.

Diameter of well is 12 inches. Depth 53 feet. Static level 10 feet. Draw down at 450 gallons per minute is 10 feet.

The complete line of Deming Turbines covers a full range of capacities from 15 to 3500 gallons per minute for wells from 4 to 16 inches or larger.

Send for 24-page, illustrated BULLETIN 4700. It gives you all the important facts and useful data on Deming Deep Well Turbine Pumps.

THE DEMING COMPANY • 512 Broadway, Salem, Ohio

DEMING DEMING DEPENDABLE PUMPS **PUMPS**

that could be put into this well to settle or clear up the dirty water?
W. V. Pa.

We are inclined to believe that one or both of two conditions may be involved in the roily appearance of the water when it is pumped from the well you speak of.

1. *Casing pipe must be seated watertight in the sandstone formation. This would prevent leakage from the annular space surrounding the casing pipe into the well past the lower casing pipe terminal, or through cracks in the rock at this point.*
2. *The sandstone may be poorly cemented and contains more or less silt or similar substances. With each disturbance of the water in the formation, due to pumping, there would be a period during which the water would not be clear after starting the pump.*

The remedy for condition (1) is to drive the casing until seated water-tight, or set in a liner in cement grout to a suitable depth below the casing pipe terminal.

Condition (2) requires cementing through as much of the sandstone formation as may be unsatisfactory as a water yielding horizon.

Sometimes, when the water in a well does not clear up, it may be due to minerals in the water. Sometimes, too, wells drilled in limestone will pump roily water which looks like there is lime or clay mixed with it, but will suddenly clear up and deliver nice clear water for a period and then become roily again.

There is no chemical that can be put in the well to settle or clear up this dirty water. If there is any question about the quality of the water or the presence of minerals, a chemical analysis of the water will show what the trouble is. If you were to send a sample of the water to your State Department of Health, they should be able to tell you if there is any mineral in the water or just what is causing the discoloration.

Easy way to get
GOOD WATER
from more wells—

MICROMET®
prevents red water
stops scale
controls corrosion

Low-cost Micromet Pump Feeder provides protective Micromet treatment from pump to tap.

Write for the full story of Micromet.

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Bargain Counter

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: 30c per line. Minimum charge $1.20. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date—10th of preceding month. Example — January issue closes December 10th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

Drilling rig, custom-built by mechanical engineer. Compares with 21-W. Mounted on 2-ton Reo truck. All in A-1 shape. Ideal for one man operation. Tools for 6" and 8" hole. Price $1950. Have too many machines. Remick Artesian Well & Pump Co., Inc., Rye, N. H.

Complete well drilling business, northern Illinois, including; Bucyrus-Erie 22-W drill with casing reel, purchased in 1947, mounted on International truck. Also Dodge pickup truck, drilling tools, fishing tools and miscellaneous equipment for drilling 6" wells. Test pumps, pipe, etc. Must sell to settle estate. All equipment in first-class condition and must be seen to be appreciated. Priced right. Box 398

#71 Speed Star spudder with equipment casing reel, 45 foot mast, mounted on 3-ton truck. All excellent condition. Also 240 Star spudder with equipment, truck mounted. C. A. McMillen, 117 East Main St., Titusville, Pa.

DRILLS FOR SALE

New #42 Cyclone (drilled five 80 foot wells) with complete set drilling tools, mounted on very good '46 Ford, complete outfit cost $5725. Will sell for $4700.

#50 Keystone 2½ years old on '44 G.M.C. 4x6 Army truck, both in excellent condition, $4600.

#50 Keystone on '39 Ford 3½ years old both in excellent condition, $4000.

#71 Speed Star, trailer type, 3 years old in excellent condition, $3200.

Located in Pennsylvania. Box 406

Custom-built machine, similar to 240 Star. Built with new steel and new factory made parts with 32 ft. mast. Powered with 15 HP Continental motor with clutch; V-belt drive; mounted on '36 Brockway truck. A nice machine to operate, complete with 6" tools, including slip socket fishing tool. $1200. C. H. Georgia, R. D. No. 3, Trumansburg, New York. Phone 220F4.

#4 Loomis Clipper powered by GMC 6x6 truck engine. Machine mounted on '41 Ford 1½-ton, long wheel base, cab-over-engine truck. In good operating condition. Located central Ohio. Box 400

Bucyrus-Erie 22-W drill mounted on a 1½-ton '37 Ford truck. Machine equipped with rubber cushioned sheaves, spooling device and tool guide.

Bucyrus-Erie 22-W drill mounted on two ton '36 GMC truck. Machine equipped with rubber cushioned sheaves, spooling device and tool guide. Both of these machines in A-1 condition. Located North Carolina. Will sell with or without four inch and six inch tools and cable. Box 401

Bucyrus-Erie 20-W drill with tools and cable, mounted 1946 1½-ton Chevrolet. Truck fish plated, new rubber all around. Machine new March 1950, has drilled 1500'. Write Francis Dunn, 559 Abeel St., Kingston, New York.

DRILLS FOR SALE

Bucyrus-Erie 20-W, bought new November 1949, about 10 months actual use. Equipment —drill guide, calf reel, blower, cat walks, power derrick hoist, approximately 600 feet ⅝" drill cable, about 500 feet ¾" sand line, 4¼x18 drill stem, rope socket, two 6" drill bits, 2¼x3¼ API joints, round solid jar bumper wrenches and chain tightener, bailer and hand tools. Drill tools are made to ride the mast. Machine mounted on a 4x4 Chevrolet truck with booster brakes. Will carry complete outfit without extra truck. Everything listed above priced at $4000, cash, F.O.B. J. E. Miller, P. O. Box 14, La Vergne, Tennessee, phone 38.

#10 Ideco, just completely overhauled and painted and in excellent condition. Has 36' telescopic derrick, power derrick hoist, catheads, pipe braces, 300' ⅝" drilling and 350' ¾" sand line. Mounted on 1½-ton Ford truck with new factory rebuilt engine. Located Indiana, a real buy at $2500. Box 404

Combination all-steel custom-built jetting and cable tool machine, mounted on '37 Dodge 1½-ton truck. 28' tubular derrick with rubber shock absorber, pipe braces and power derrick hoist. Just put factory rebuilt motor on machine and complete transmission. Located Michigan. Priced to sell at $1500. Box 405

1946 #71 Speed Star mounted on heavy-duty truck. This machine in first-class operating condition. Price, less tools and cable, $2800. Will sell with six-inch tools and cables, if desired. Located North Carolina and available for immediate delivery. An excellent buy at a fair price. Box 399

Home-made machine, heavy duty cog lift for cable. Hercules power unit on '39 Studebaker cab-over truck. Price $600. No tools. H. E. Shirley, Stephenson, Virginia.

(continued on page 30)

DRILLS FOR SALE

(continued from page 29)

#100 Howell mounted on '39 Reo cab-over-engine 1½-ton truck. Telescoping 32' all-steel derrick, pipe braces. Ideal for cable tool or jetting and in first-class condition. Price $3000. Located Indiana.
Box 403

Good going well drilling business. Model 70 Keystone machine with 28 hp LeRoi engine, 38 ft. derrick, mounted on 1937 GMC 2-ton truck. Two swivel sockets, four bits, 2x3-7 API joints, 2 stems. Ten room home on beautiful 1½ acres in suburb of Milwaukee. Call Milwaukee BLuemound 8-2716. Fred Kuck, Brookfield, Wis.

New all steel custom-built drill powered with model "A" Ford engine, 40' telescoping mast with power hoist, mounted on '37 Dodge 1½-ton, 500' capacity, will sell less than cost. Also No. 1½ Loomis Clipper wire line drill, with 32' steel telescoping mast and power hoist, powered by 1 year old Willys jeep engine with electric starter and throw-out clutch. Mounted on '37 Dodge 1½-ton truck, complete with 5⅝" tools and line. Write J. W. Stephens, Christiansburg, Ohio.

Well auger mounted on 6x6 Studebaker truck, purchased new 1949. Drills up to 36" hole. Complete with 100' drill rod. Rig practically new. Price $3500. Write Columbia Pump & Well Company, 232 Gallatin St., N.W., Washington, D. C.

Star Model 45ST, located in Michigan, priced to sell. Model 42 Cyclone, with or without tools. Model 240 Star, located in Ohio. Call or write Buckeye Supply Company, Zanesville, Ohio.

All-steel No. 60 Howell well rig in first-class condition. Power derrick hoist, two catheads, rear axle steering. Rubber shock absorber in derrick, four-cylinder LeRoi motor, four solid-rubber tires and semi-fifth wheel for any flatbed truck hook up. Price $1000. Jos. A. Hartmann, New Prague, Minn. Phone 155.

Star 71 drill mounted on 3-ton Dodge truck, gas engine, self starter, 150 amp welder, all tools 6" to 16"—bailers and perforators also 1½-ton Chevrolet truck. Misc. items. Price $9500. Wm. A. Douglas, 304 13th St., Paso Robles, Calif.

DRILLS FOR SALE

Two 22-W Bucyrus-Erie drill machines approximately two years old, in very good condition. Not mounted. Equipped with spooling device, calf reel and Hercules power. All tools and lines, also steel catwalk, are included with machines and are priced to sell. Call or write Fred Hawthorne, 2314 Morningside Avenue, Parkersburg, West Virginia. Telephone 8-6626.

For Sale: Well drilling and pump business. 3 Bucyrus-Erie drills; lots of pipe and casing; pumps and supplies. Located in central Iowa. Owner wishes to retire. Box 392

Rotary drill, mounted on 1934 International truck, with about 300 ft. of 1½" drill rods. 5" and 6" drills, powered by 4 cyl. LeRoi engine in good condition. Price $900. Walter A. Nelson, RFD #3, Brewster, N. Y. Phone 9-3860.

Bucyrus-Erie 24-L drill complete with calf reel, rubber cushioned sheaves, tool guide blower, 40 foot derrick. Excellent condition. 500 feet ¾" drill cable and sand line. Mounted on heavy duty Ford truck. New tires. Also 1946 four-wheel drive Autocar truck. Could be used either as tractor or to mount drilling equipment. Full air brakes. Low mileage, good as new. Eino Heine, Ashby, Massachusetts. Phone 114-21.

71 Speed Star. New 1949. Excellent condition. Complete with calf reel, catheads. Mounted on Reo truck. Immediate sale. Contact Tasker Artesian Well Company, Northwood Narrow, New Hampshire.

Howell No. 60. All steel, shock absorber pneumatic tires, trailer type. Alton Cement Works, Alton, Iowa.

MISC. FOR SALE

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Help Wanted: Experienced water well driller to operate 24-W Bucyrus-Erie drills. Drilling holes from 5" to 20". Have casing and supplies on hand, also plenty of work. Good operator can work as steady as he desires. Good wages for right party. Work located in Iowa. Box 396

Wanted: Experienced drillers for six and eight inch work on Bucyrus-Erie machine in North and South Carolina. Job transportation furnished. Steady employment and good working conditions. Will start at ten dollars to eleven dollars per day based on experience.
Box 402

Help Wanted: Drillers for Bucyrus-Erie machines. Big hole experience necessary. Great Lakes region. Box 391

Wanted: Experienced hard rock driller. Central Wisconsin. Box 393

POSITIONS WANTED

Driller wants steady work. Has long experience. Can run 22-W, 24-L, 29-W and 33-W. Also has experience on screen work. Bernard F. Smith, 36 East Main St., Middleboro, Mass.

Writer seeks position as trainee while on long leave, any time between June and December 1951, to study varied drilling methods. At present employed by The Mowlem Construction Company Limited, Nairobi, Kenya Colony as Senior Field Inspector. Ten years' experience on Keystone, Star and Bucyrus-Erie 22-W & 24-L rigs in South Africa and East Africa (Kenya, Uganda and Tanganyika). 33 years of age, South African. Prepared to pay own fare, arrange immigration but owing to dollar regulations would be unable to pay for living expenses; would, therefore, be prepared to give services in return for living expenses. C. Swanpoel, P. O. Box 78, NAIROBI, Kenya Colony, Africa.

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